

***Austinixa*, a new genus of pinnotherid crab  
(Crustacea: Decapoda: Brachyura), with the description of  
*A. hardyi*, a new species from Tobago, West Indies**

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*Abstract.*—The new genus *Austinixa* is recognized for *Pinnixa cristata* Rathbun and six other species formerly assigned to *Pinnixa* White, 1846. An eighth species, *A. hardyi*, new species, is described from Tobago, West Indies. Members of *Austinixa* can be distinguished from species of *Pinnixa* sensu stricto by the transverse ridge that completely crosses the posterior surface of the carapace, the strongly deflected fingers of the chelae, and the much longer, slenderer, and smoother third walking leg. Members of *Austinixa* often are associated with callianassid shrimps. *Austinixa hardyi*, new species, found associated with a member of the callianassid genus *Callichirus* Stimpson, 1866, is the only described species of *Austinixa* having dense patches of setae on the carapace of the male.

Collections of infaunal decapods from Tobago were made by one of us (R.H.) in 1992 and 1993. One of the species collected proved to be an undescribed member of the pinnotherid genus *Pinnixa* White, 1846. It is named and it and related species are placed in a new genus below.

Abbreviations used in the accounts include: A1, antennule; cl, carapace length; Mxp3, third maxilliped; P1, cheliped; P2–5, first to fourth walking legs. Carapace size is expressed as length  $\times$  width. All measurements are in millimeters (mm).

The types have been deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM).

*Austinixa*, new genus

*Diagnosis.*—Carapace much wider than long, with transverse ridge extending from side to side across cardiac region. Mxp3 with palp articulated distally on merus, dactylus articulated proximally on propodus.

Movable finger of chela deflected in both sexes, vertical or nearly so in males. Third walking leg (P4) much the largest. Both sexes with 7 abdominal somites. Male gonopod simple, apex often bent laterally, with corneous tip, not markedly ornate.

*Type species.*—*Pinnixa cristata* Rathbun, 1900, by present designation.

*Included species.*—*Austinixa aidaae* (Righi, 1967), new combination, *Austinixa behreae* (Manning & Felder, 1989), new combination, *Austinixa chacei* (Wass, 1955), new combination, *Austinixa cristata* (Rathbun, 1900), new combination, *Austinixa felipensis* (Glassell, 1935), new combination (and its synonym *Pinnixa salvadorensis* Bott, 1955), *Austinixa gorei* (Manning & Felder, 1989), new combination, *Austinixa patagoniensis* (Rathbun, 1918), new combination, and *Austinixa hardyi*, new species.

*Etymology.*—We dedicate this new genus to our colleague Austin B. Williams, Systematics Laboratory, National Marine Fisheries Service, the acknowledged dean of

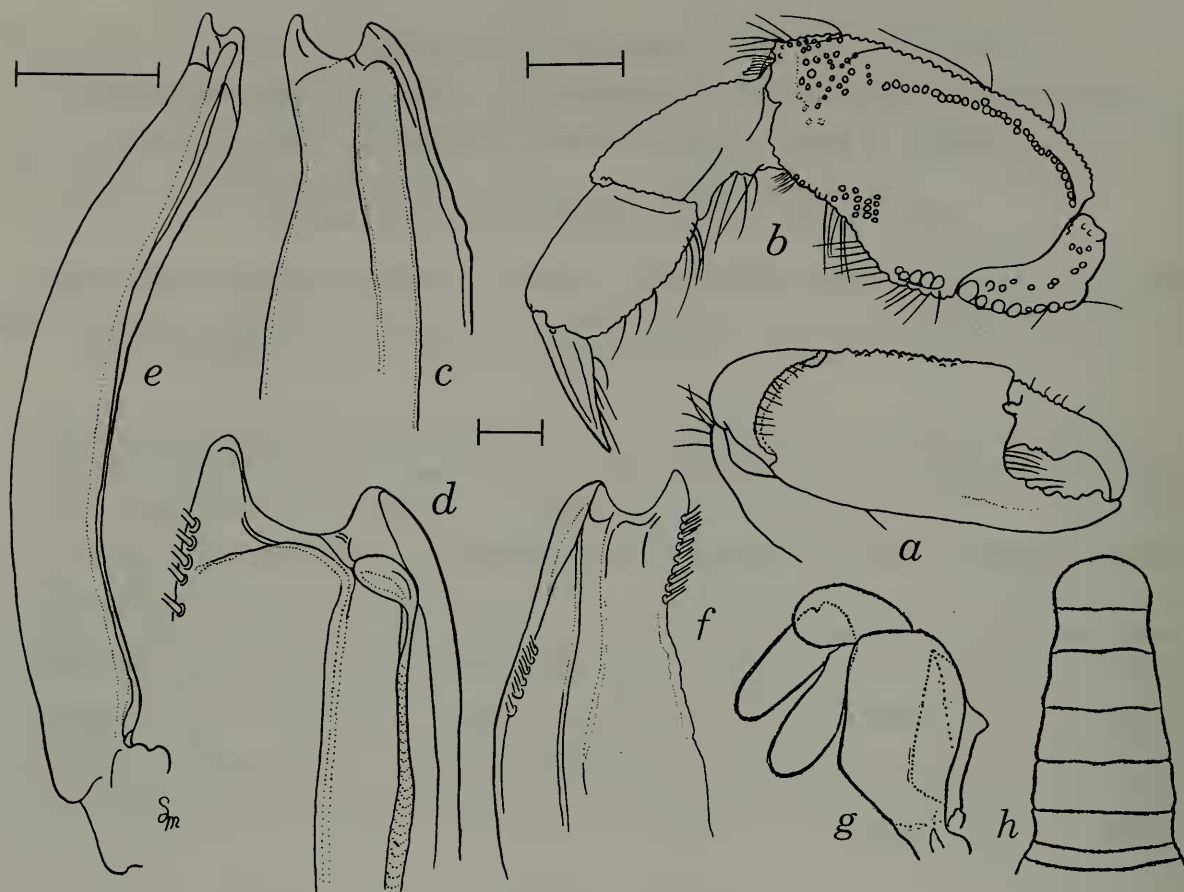


Fig. 1. *Pinnixa cylindrica* (Say). *a-f*, Chesapeake Bay, male, 7.1 by 14.7 mm, USNM 49643; *g, h*, Sarasota Bay, Florida, male, 5.6 by 11.0 mm (from Rathbun 1918: fig. 99). *a*, Right chela, outer face; *b*, Left P3, posterior face; *c*, Distal part of gonopod, abdominal view; *d*, Apex of gonopod, enlarged, abdominal view; *e*, Gonopod, abdominal view (setae omitted); *f*, Apex of gonopod, sternal view; *g*, Left Mxp3; *h*, Abdomen. Scales equal 2 mm (*a, b*), 1 mm (*c-f*), 0.1 mm (*d*).

studies on the systematics of marine decapods of the eastern United States. The name is composed of the given name Austin with the ending of the generic name *Pinnixa*. The gender is feminine.

*Remarks.*—The transverse ridge completely crossing the cardiac region of the carapace will serve to distinguish members of this genus from all species now placed in *Pinnixa*. The deflected movable finger in males will distinguish males of members of this genus from males of members of the type species of *Pinnixa*, *P. cylindrica* (Say, 1818) (Fig. 1), in which the fingers are horizontal in both sexes (Fig. 1*a*).

In *Pinnixa cylindrica* the third walking leg (P4) is much shorter and stouter than in members of *Austinixa*, and the surface and dorsal margin of the merus are ornamented with tubercles, some arranged in beaded carinae (Fig. 1*b*). In members of *Austinixa* the

third walking leg is more elongate, slender, and the merus is smooth, not ornamented with tubercles.

The third maxilliped of *Austinixa* (Figs. 3*c*, 4*a*) is similar to that of *Pinnixa* (Fig. 1*g*), with the propodus and dactylus both elongate, oval, much longer than their carpus, and with the dactylus inserted basally on the propodus.

The male gonopod of members of *Austinixa* (Fig. 3*o*) differs from that of *Pinnixa cylindrica* (Fig. 1*c-f*) in having a laterally-deflected, corneous apex. The gonopod of *P. cylindrica* forms a shallow sinuous curve with the corneous apex directed along the longitudinal axis, not deflected.

The abdomen of males of *Austinixa* is similar in shape to that of *Pinnixa cylindrica*, composed of seven somites. The telson is broader than long, rounded apically, and longest of all segments.

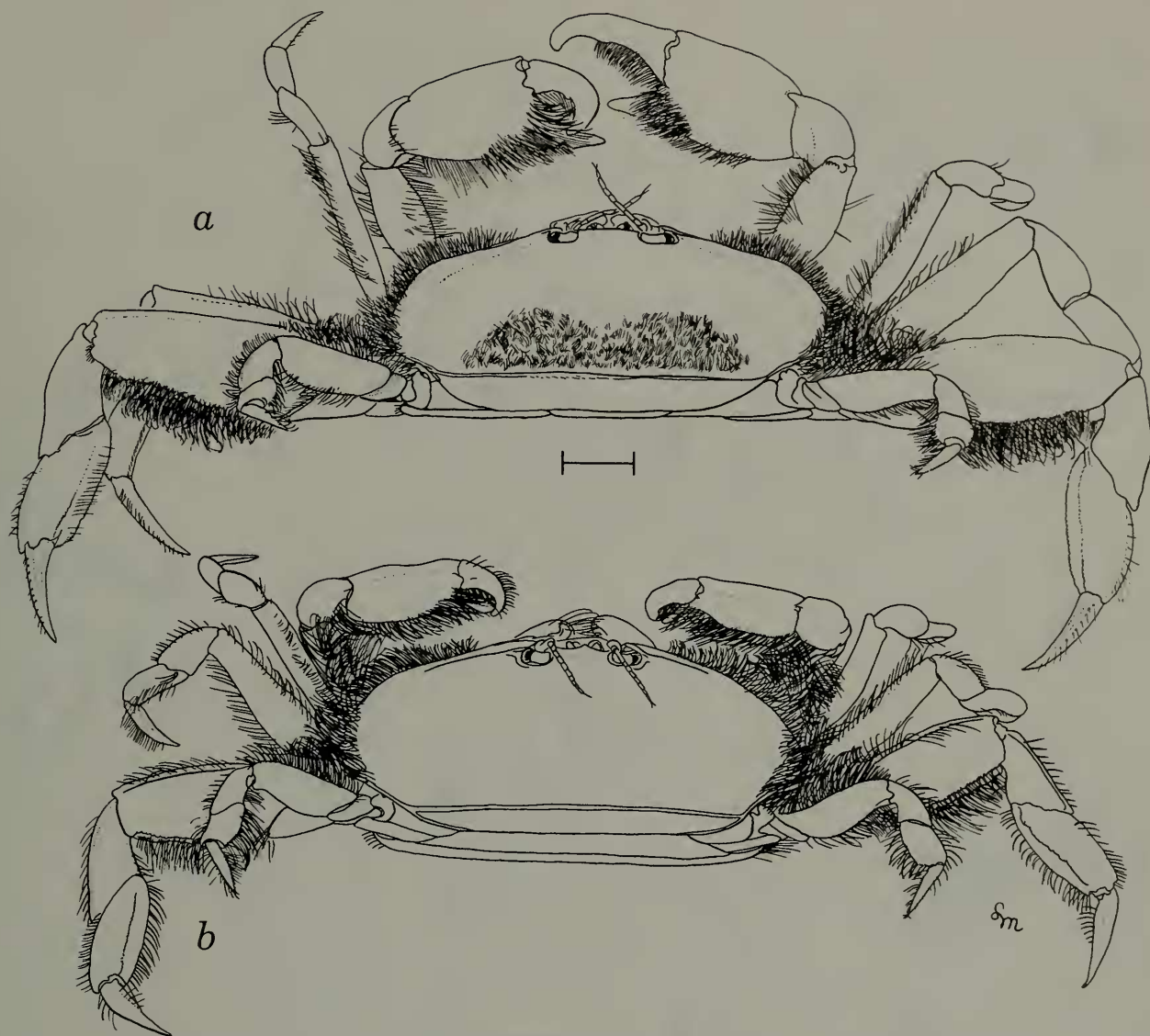


Fig. 2. *Austinixa hardyi*, new genus, new species. Dorsal view. *a*, male holotype, Tobago, 2.6 by 6.5 mm, USNM 284176; *b*, female paratype, Tobago, 2.4 by 6.5 mm, USNM 284177. Scale equals 1 mm.

*Austinixa hardyi*, new species

Figs. 2–4

*Material*.—Tobago, Bloody Bay (11°18'N, 60°38'W), beach to a depth of 1.5 m, sand bottom with some rocks, leg. R. W. Heard, sta 4, 4 Apr 1992: 16 ♂♂, 1.9 × 3.4–2.8 × 7.5, 6 non-ovigerous ♀♀, 1.9 × 5.0–2.7 × 7.3, 13 ovigerous ♀♀, 1.8 × 4.6–2.5 × 7.0. A male, 2.6 × 6.5 is holotype, USNM 284176; other specimens are paratypes, USNM 284177.

*Diagnosis*.—Carapace lacking branchial ridge extending laterally from orbit. Male with dorsal patch of setae on carapace anterior to cardiac crest. Propodus of P4 with bicarinate opposable (ventral) margin. Dactylus of P4 with ridge on posterior face.

*Description*.—Carapace smooth, 2.3–2.9 times broader than long, lacking branchial ridge on anterior surface. Male with broad patch of short setae anterior to cardiac crest, patch occasionally divided into 2 submedian patches. Carapace densely setose laterally, setae extending onto proximal segments of pereopods.

Antennular (A1) flagellum with 9 segments, third longest, ultimate more than half as long as penultimate. Basal segments with distinct movable spine.

Chelipeds (P1) of male and female dissimilar. Male chela larger, movable finger about as long as palm, strongly deflexed, almost vertical; palm height subequal to length dorsally; distal surface of palm al-



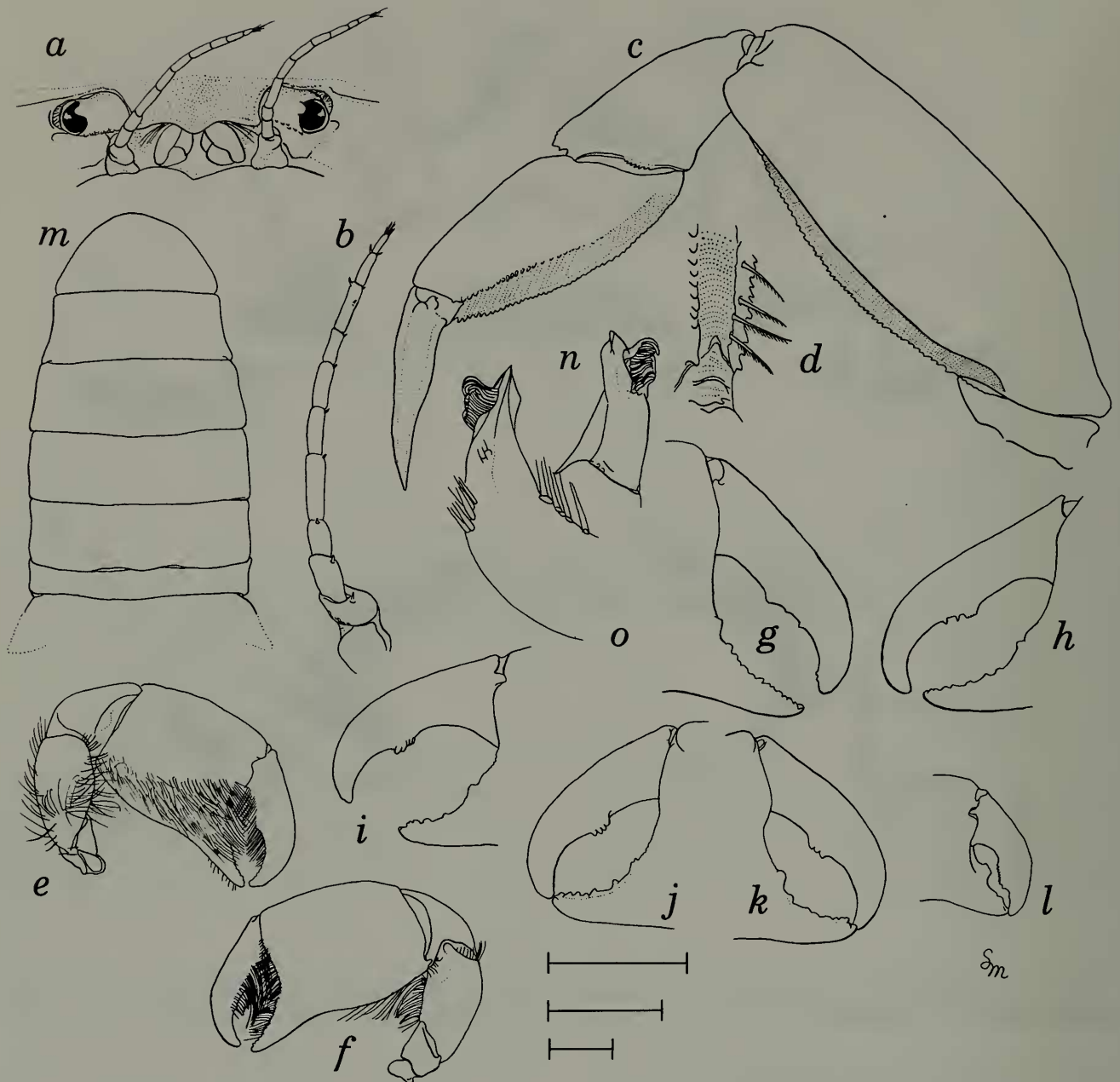


Fig. 3. *Austinixa hardyi*, new genus, new species. Male paratypes, Tobago, USNM 284177: *a-h*, *n-p*, 2.8 by 7.5 mm; *i*, 2.5 by 6.6 mm; *j*, 2.3 by 6.6 mm; *k*, 1, 2.4 by 6.6 mm; *m*, 1.9 by 5.0 mm. *a*, Front; *b*, Antennule; *c*, P3; *d*, Distal part of ventral margin of propodus, enlarged; *e*, Left P1, outer face; *f*, Left P1, inner face; *g*, Fingers of left chela; *h*, Fingers of left chela; *i*, Fingers of right chela; *j*, Fingers of left chela; *k*, Fingers of right chela; *l*, Fingers of left chela; *m*, Abdomen; *n*, Apex of gonopod, sternal view; *o*, Distal half of gonopod, abdominal view. Upper scale equals 1 mm (*a*, *c*, *m*), 0.5 mm (*b*, *g-l*); middle scale equals 1 mm (*e*, *f*), 2 mm (*d*); lower scale equals 0.1 mm (*n*, *o*).

most vertical in male; inner lower surface of palm and gape densely setose; fingers variably toothed. Female chela smaller, movable finger shorter than palm, deflexed but less so than in male, height of palm less than length; fingers variably toothed.

First and second walking legs (P2, P3) slender, largely naked except for dense patch of proximal setae, few, scattered, plu-

mose setae on distal segments, and short setae on dactylus; setation variable.

Third walking leg (P4) much the longest, with dense patch of setae proximally and ventrally on merus, remainder of surface largely naked. Merus length about twice height in males, 2.5 times height in females. Propodus length about 1.5 times height in males, twice height in females, ventral (op-

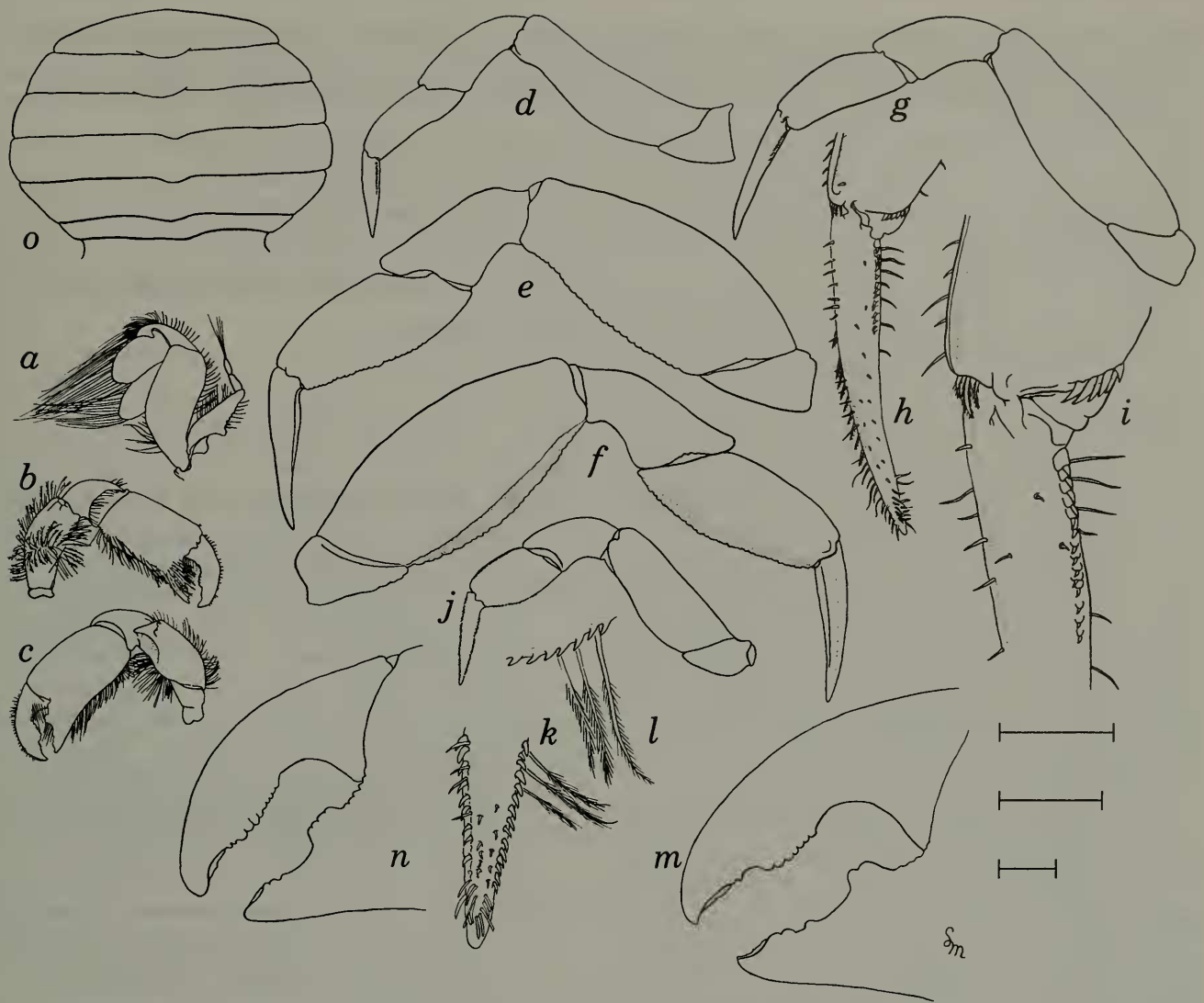


Fig. 4. *Austinixa hardyi*, new genus, new species. Female paratypes, Tobago, USNM 284177: *a-l, n, o*, 2.5 by 7.0 mm; *m*, 2.2 by 5.8 mm. *a*, Mxp3; *b*, Left P1, inner surface; *c*, Left P1, anterior surface; *d*, Right P2, anterior surface; *e*, Right P4, anterior surface; *f*, Right P4, posterior surface; *g*, Right P3, anterior surface; *h, i*, Distal part of propodus and dactylus, right P2, enlarged; *j*, Right P5, anterior surface; *k*, Dactylus of right P5, ventral view; *l*, Ventral margin of propodus, enlarged; *m*, Fingers of left chela; *n*, Fingers of left chela; *o*, Abdomen. Upper scale equals 1 mm (*a-c*); middle scale equals 1 mm (*d-g, j*); lower scale equals 0.1 mm (*h-i, k-l*), 0.5 mm (*m, n*).

posable) margin bicarinate. Dactylus with ventral ridge on posterior surface.

Fourth walking leg (P5) shortest of all walking legs, when extended reaching beyond base of carpus of P4 in females, falling short of carpus of P4 in males.

Male abdomen with sides of first 5 somites parallel, tapering at sixth somite, latter with concave lateral margins; telson broader than long, broadly rounded, longest of all somites.

Gonopod sinuous, apex sharply curved laterally, acute, surmounted by thick patch of long setae.

*Size*.—Males cl 1.9 mm by cb 3.4 mm to 2.8 mm by 7.5 mm; non-ovigerous females 1.9 mm by 5.0 mm to 2.7 mm by 7.3 mm; ovigerous females, 1.8 mm by 4.6 mm to 2.5 mm by 7.0 mm.

*Remarks*.—*Austinixa hardyi* differs from all known representatives of the genus in having a dense patch or patches of setae on the carapace anterior to the cardiac crest in males; the dorsal surface of the males is naked in all of the other species.

*Austinixa hardyi* resembles *A. aidae* and *A. gorei* in lacking the branchial ridges anteriorly on the carapace, but differs from *A.*

*gorei* in having a bicarinate ventral margin on the propodus of P4 and differs from both in having a posterior ridge on the dactylus of P4. *Austinixa hardyi* is a comparatively much wider species than *A. aidae* and also is much smaller, with a maximum carapace width of 7.5 mm in comparison with a width of 10 mm in *A. aidae*.

Examination under high magnification of the ventrodiscal surface of the propodus as well as the proximal, ventral surface of the dactylus of the first walking leg (P2) of *A. hardyi* revealed the presence of a patch of 7–8 short but strong spines on the ventrodiscal margin of the propodus and a line of 14+ short spinules proximally on the dactylus. These features need to be investigated further, as they may prove to be diagnostic characters in members of this genus. The spination of the propodus and dactylus of the last walking leg (P5) also may prove to be diagnostic.

The ornamentation of the proximal segments and relative length of all segments of the antennules (A1) also may prove to be a useful character in members of *Austinixa*. In *A. hardyi* the three proximal segments have a single movable spine and the distal segment is more than half as long as the penultimate. In *A. gorei* the proximal segments are unarmed and the distal segment is less than half as long as the penultimate. In both species the third segment is longest. These need to be surveyed throughout the genus.

*Etymology*.—Named for J. David Hardy, who is coordinating a survey of the fauna of Tobago for the Tobago House of Assembly.

*Biology*.—This species was collected as an associate of a species of *Callichirus*, a Caribbean species near *C. major* (Say, 1818).

*Distribution*.—Known only from Tobago.

#### Acknowledgments

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fauna of Tobago. Manning's studies on the systematics of pinnotherid crabs are supported by the Smithsonian Marine Station at Link Port, Fort Pierce, Florida, a facility of the National Museum of Natural History in Washington, D.C. This paper is contribution no. 411 from that facility. The figures were inked and assembled by Lilly King Manning.

#### Literature Cited

- Bott, R. 1955. Litorale Dekapoden, ausser *Uca*. Dekapoden (Crustacea) aus El Salvador, 2.—*Senckenbergiana biologica* 36(1/2):45–70.
- Glassell, S. A. 1935. Three new species of *Pinnixa* from the Gulf of California.—*Transactions of the San Diego Society of Natural History* 8(5): 13, 14.
- Manning, R. B., & D. L. Felder. 1989. The *Pinnixa cristata* complex in the western Atlantic, with descriptions of two new species (Crustacea: Decapoda: Pinnotheridae).—*Smithsonian Contributions to Zoology* 473:1–26, frontispiece (color).
- Rathbun, M. J. 1900. The catametopous or grapsoid crabs of North America. Synopses of American invertebrates, 11.—*American Naturalist* 34(403): 583–592.
- . 1918. The grapsoid crabs of America.—*United States National Museum Bulletin* 97:461 pp.
- Righi, G. 1967. Sobre alguns Decapoda do Brasil (Crustacea, Brachyura: Pinnotheridae e Parthenopidae).—*Papéis Avulsos de Zoologia, São Paulo* 20:99–116.
- Say, T. 1817–1818. An account of the Crustacea of the United States.—*Journal of the Academy of Natural Sciences of Philadelphia* 1(1)[1817]: 57–63, 65–80, 97–101, 155–169; 1(2)[1818]: 235–253, 313–319, 374–401, 423–444, 445–458, pl. 4.
- Stimpson, W. 1856. Descriptions of new genera and species of macrurous Crustacea from the coasts of North America.—*Proceedings of the Chicago Academy of Sciences* 1:46–48.
- Wass, M. L. 1955. The decapod crustaceans of Alligator Harbor and adjacent inshore areas of northern Florida.—*The Quarterly Journal of the Florida Academy of Sciences* 18(3):129–176.
- White, A. 1846. Notes on four new genera of Crustacea.—*The Annals and Magazine of Natural History* 18(118):176–178, pl. 2.